

REMARKS

Claims 112-119 are now pending in this application, claims 118-119 having been added by the Applicants in this paper. In reply to the non-final Office Action dated September 16, 2003 ("Office Action"), Applicants also submit the following remarks and arguments in regards to the Examiner's rejections. In the event that these remarks do not place this application in condition for allowance, Applicants request that the Examiner please contact the undersigned at 404-653-6460, or Robert Stanley at 404-653-6441, to discuss the continued prosecution of this application.

Claim Amendments

Applicants have added claims 118-119 directed to potassium zirconium carbonate. These claims are fully supported by the original specification in at least page 12, first full paragraph. Further, these claims specifically recite one of the compounds already listed in claims 113 and 116, similar to claims 114 and 117 specifically reciting ammonium zirconium carbonate. As a result, Applicants submit that the addition of claims 118-119 adds no new matter to this application.

Rejection under 35 U.S.C. § 103(a)

The Examiner rejected claims 112-117 under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,281,307 to Smigo et al. in combination with U.S. Patent No. 5,246,544 to Hollenberg et al. The Examiner states that Smigo et al. discloses the use of commonly employed crosslinking agents in combination with a poly(vinyl alcohol)/vinyl amine ("PVA/VA") copolymer as an additive in a paper-making process.

See Office Action at § 6. The Examiner then further relies upon Hollenberg et al. for support that one of ordinary skill in the art would substitute its disclosed zirconium compounds for the crosslinking agents of Smigo et al., thus achieving the releasable adhesive of the pending claims. Applicants respectfully traverse this rejection.

In order to establish a *prima facie* case of obviousness, the Examiner must show, in part, that the prior art references teach or suggest all the claim limitations. M.P.E.P. § 2143. Applicants submit that neither Smigo et al. nor Hollenberg et al., either separately or in combination, teaches or suggests that the zirconium-containing compounds of Hollenberg et al. would be effective crosslinkers in the copolymers of Smigo et al.

Applicants have previously submitted that Hollenberg et al. contains no teaching or suggestion that its zirconium-containing compounds can be used to crosslink the amine-containing moieties of the pending claims. See Amendment After Final dated June 4, 2003, at 6 ("Amendment After Final"). In support of this argument, Applicants stated that the functional groups in the PVA/VA copolymer of Smigo et al. contain active amine moieties that are Lewis bases. Lewis bases are substances that donate an electron pair in forming a covalent bond. See Appendix A (specifically listing amine groups as a Lewis base).

On the other hand, the polymers of Hollenberg et al., i.e., hydroxyl, carboxyl, sulfonate, sulfate, and phosphate groups, contain active hydrogens that are Brønsted acids. Amendment After Final at 8; see Hollenberg et al. at col. 6, Ins. 36-39. Brønsted acids are substances that donate a proton. See Appendix B (showing hydroxyl, carbonyl, sulfate, and phosphate groups as "typical Brønsted acids"). Hollenberg et al.

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thus discloses that its zirconium compounds work with polymers that are Brønsted acids, not Lewis bases like the copolymer of Smigo et al. and of the pending claims. Therefore, Applicants concluded that one of ordinary skill in the art would not be motivated to combine Hollenberg et al. and Smigo et al. to achieve the claimed creping adhesives. See Amendment After Final at 9. The Examiner apparently found this argument persuasive and mooted any arguments based on the modification of Hollenberg et al. by Smigo et al. See Office Action at 6, ¶ 3.

Applicants now submit that the same acid/base distinction addresses and moots any arguments that a modification of Smigo et al. via Hollenberg et al. renders obvious the pending claims. The PVA/VA copolymer disclosed by Smigo et al. contains active amine moieties that are Lewis bases. The polymers of Hollenberg et al. contain functional groups that are Brønsted acids and significantly omits amine groups from its disclosure, like those in the PVA/VA copolymers of Smigo et al. and of the pending claims. Therefore, one of ordinary skill in the art would not be motivated to modify Smigo et al. by Hollenberg et al. for the same acid/base distinction that the skilled artisan would not be motivated to modify Smigo et al. by Hollenberg et al. Further, in light of this distinction, these references in fact teach away from their combination and, thus, cannot support a *prima facie* obviousness rejection. See *In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983); M.P.E.P. § 2145(X)(D)(2) (entitled “References Cannot Be Combined Where Reference Teaches Away from Their Combination”). Because of the conflicting Brønsted acid/Lewis base teachings of the combined references, Applicants respectfully submit that the Examiner has not established a *prima facie* case of

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obviousness based on Smigo et al. in combination with Hollenberg et al. and therefore ask that this rejection be withdrawn.

In addition, Applicants submit Smigo et al. by itself cannot render obvious the pending claims. Another requirement of a *prima facie* case of obviousness is that the reference or references teach or suggest all the claim limitations. See M.P.E.P. § 2143. Independent claim 112 recites a creping adhesive composition crosslinking "at a creping process drying surface" and exhibiting "a peel force of at least about 300 grams per 12 inches of fibrous web." Smigo et al. neither teaches nor suggests these limitations and Applicants submit that that it is not "tenable that these properties may very well be met by the composition of Smigo et al." Office Action at 4.

To support this position, Applicants demonstrate that the Smigo et al. compositions, even if used with zirconium containing crosslinking agents, cannot achieve the desired properties. Despite the Examiner's continual dismissal of Phuong Van Luu's Declaration (see Final Office Action dated January 15, 2003, at 4), it states unequivocally that adding zirconium compounds to a PVA/VA copolymer creates a gel. See Declaration Under 37 C.F.R. § 1.132 of Phuong Van Luu dated February 2, 2000, at ¶ 6. Even though the Declaration continues by stating that such a gel "could not be used as a creping adhesive," Applicants submit that it equally could not be used as a dry end paper additive as disclosed by Smigo et al. Such a gel would inevitably clog the paper-making machinery or result in poor quality paper—a most unintended and ruinous result. Therefore, the Examiner's modification of Smigo et al. would render that reference's teachings unsatisfactory for their intended purpose (see M.P.E.P.

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§ 2143.01), providing no motivation to modify its teachings in reaching the claimed creping adhesive.

Because one of ordinary skill in the art would not modify Smigo et al. to achieve the composition of the pending claims, Smigo et al. cannot teach or suggest each of the claimed elements. As a result, Applicants submit that any *prima facie* case of obviousness resting only on Smigo et al. must fail.

Double Patenting Rejection

The Examiner has provisionally rejected claims 112-117 under the judicially-created doctrine of obviousness-type double patenting over claims 1-5, 26-31, and 34-35 of co-pending Application Serial No. 09/486,383. The Examiner has stated that a timely filed Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 (c) may overcome this rejection. Applicants have previously asked that the Examiner hold this rejection in abeyance until the indication of allowable subject matter. See Amendment After Final at 5. With the amendments and remarks made in this paper, if the Examiner believes the pending claims to be in condition for allowance, Applicants request that the Examiner please contact the undersigned regarding an appropriate resolution of this rejection.

Conclusion

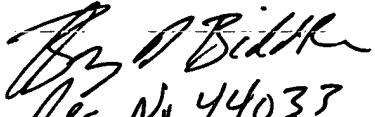
In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration and the continued examination of this application and the timely allowance of the pending claims. In the event that these remarks do not place this application in condition for allowance, Applicants request that the Examiner please

contact the undersigned at 404-653-6460, or Robert Stanley at 404-653-6441, to discuss the continued prosecution of this application.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Attachments: **Appendix A: Definition of Lewis Base**
Appendix B: Examples of Brønsted Acids

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
Phuong Van LUU et al.) Group Art Unit: 1713
Application No.: 09/904,102) Examiner: M. L. Reddick
Filed: July 13, 2001)
For: CROSSLINKABLE CREPING)
ADHESIVE FORMULATIONS)

APPENDIX A

Definition and Examples of Lewis Bases

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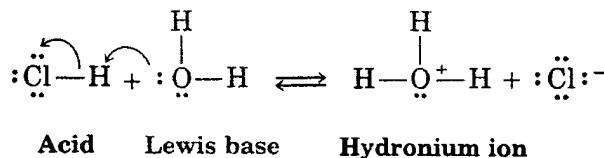
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LEWIS BASES

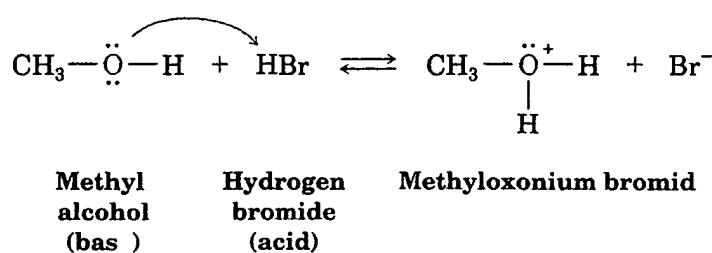
The Lewis definition of basicity—a compound with a pair of nonbonding electrons that it can use in forming a bond to a Lewis acid—is similar to the Brønsted-Lowry definition. Thus, H_2O , with its two pairs of nonbonding electrons (lone pairs) on oxygen, acts as a Lewis base by donating an electron pair to a proton in forming the hydronium ion, H_3O^+ :



In a more general sense, most oxygen- and nitrogen-containing organic compounds are Lewis bases because they have lone pairs of available electrons. Divalent oxygen compounds each have two lone pairs of electrons on oxygen, and trivalent nitrogen compounds have one lone pair. Note in the following examples that some compounds can act as both acids and bases, just as water can. Alcohols and carboxylic acids, for instance, act as acids when they donate a proton but as bases when their oxygen atom accepts a proton.

Some Lewis bases	$\text{CH}_3\text{CH}_2\ddot{\text{O}}\text{H}$	$\text{CH}_3\ddot{\text{O}}\text{CH}_3$	$\text{CH}_3\text{C}\text{H}$	CH_3CCH_3
	An alcohol	An ether	An aldehyde	A ketone
	$\text{CH}_3\text{C}\text{Cl}$	$\text{CH}_3\text{C}\text{OH}$	$\text{CH}_3\text{C}\text{OCH}_3$	$\text{CH}_3\text{C}\text{NH}_2$
	An acid chloride	A carboxylic acid	An ester	An amide
	$\begin{array}{c} \text{CH}_3\text{NCH}_3 \\ \\ \text{CH}_3 \end{array}$	CH_3SCH_3		
	An amine	A sulfide		

For example:



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APPENDIX B

Examples of Brønsted Acids

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Typical Brønsted Acids and Their Conjugate Bases

Compound	K_a	pK_a	ConjugateBase	K_b	pK_b
HI	3×10^9	-9.5	I^-	3×10^{-24}	23.5
HCl	1×10^6	-6	Cl^-	1×10^{-20}	20
H_2SO_4	1×10^3	-3	HSO_4^-	1×10^{-17}	17
H_3O^+	55	-1.7	H_2O	1.8×10^{-16}	15.7
HNO_3	28	-1.4	NO_3^-	3.6×10^{-16}	15.4
H_3PO_4	7.1×10^{-3}	2.1	$H_2PO_4^-$	1.4×10^{-12}	11.9
CH_3CO_2H	1.8×10^{-5}	4.7	$CH_3CO_2^-$	5.6×10^{-10}	9.3
H_2S	1.0×10^{-7}	7.0	HS^-	1×10^{-7}	7.0
H_2O	1.8×10^{-16}	15.7	OH^-	55	-1.7
CH_3OH	1×10^{-18}	18	CH_3O^-	1×10^4	-4
HCCH	1×10^{-25}	25	HCC^-	1×10^{11}	-11
NH_3	1×10^{-33}	33	NH_2^-	1×10^{19}	-19
H_2	1×10^{-35}	35	H^-	1×10^{21}	-21
$CH_2=CH_2$	1×10^{-44}	44	$CH_2=CH^-$	1×10^{30}	-30
CH_4	1×10^{-49}	49	CH_3^-	1×10^{35}	-35